12/30/85 RP750-1

POPULATION TODAY

Vol. 13, No. 12 December 1985

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A Publication of the Population Reference Bureau, Inc. ISSN 0749-2448

The 1990 Census: Coping with Bigness

1990 is coming, and so is the U.S.'s next decennial Census. While Census Day is over four years off, the Census Bureau's Decennial Planning Division has already been working on it for the past three years.

Two extensive test censuses were held in 1985 in Jersey City, N.J., and Tampa, Fla., to evaluate new procedures and equipment. Full-scale population and housing censuses will be conducted in parts of Mississippi and Los Angeles Co., Calif., on March 16, 1986. By early 1987, a little more than a year from now, the final methodology and subject matter will be settled, and the year after, a major dress rehearsal will be performed. All this is leading up to April 1, 1990—Census Day.

1990 will also mark the 200th anniversary of the first decennial census, conducted in 1790 under the auspices of the Dept. of State and its Secretary Thomas Jefferson. Then, census takers on horseback counted 3.9 million American people. For 1990, the Bureau faces the challenge of keeping the population of temporary census takers in the quarter-million range, and the cost of the operation nearer to $1 billion than $2 billion.

Like other manifestations of modern life, headcounting is more complex than it used to be. The question is whether the census has crossed the same threshold as say, the Summer Olympics or the U.S. government itself, such that its very importance and bigness affect the accomplishment of its mission.

Has the Census come to that point? Its role under the Constitution has been to apportion Congress, but decade by decade it has taken on other, multiple roles—gathering population characteristics and establishing bases for the distribution of many federal programs. As a result, it has been caught between the need for more rapid gathering and dissemination of data, and the constrictions of increasing costs and forces trying to make the census into a political football. (Although the 1980 Census was the most accurate ever, for these reasons it was one of the most controversial.)

For 1990 the Bureau hopes to keep the problems of collection and cost under control by planning streamlined, more automated procedures. One way would be to have respondents' filled-out census forms transferred into computers at the earliest stage possible, perhaps at the hundreds of district offices running the census at the local level. (In 1970, this was done at only three large data depots.) This might even be facilitated by computers reading handwritten answers, though it is not yet clear technology will be able to do this on a mass practical basis by 1990.

The recent tendency of the census to become a political football is less easy to resolve. The Bureau was able to release the 1980 Census results on time, but only despite legal complications caused by about 50 lawsuits disputing different aspects of the census.

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POPULATION TODAY

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VOL. 13, NO. 12 December 1985

POPULATION TODAY, the newsmonthly of population and demography, is published 11 times a year (a combined issue in July/August) by the Population Reference Bureau, Inc., founded in 1929, a nonprofit organization engaged in the objective dissemination of population information. The views and opinions of POPULATION TODAY's contributors are their own and do not necessarily reflect those of PRB.

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Back Issues: Back issues of POPULATION TODAY and its predecessor INTERCOM are available in limited quantities from PRB for $2.00 per copy. Give the gift that keeps on giving: INTERCOM 3-ring binders are available for only $1.39 ea.

Mailing: Printed in Washington, D.C. Mailed nonprofit postage rate in the United States; printed matter surface rate to Canada, Mexico, and to foreign subscribers.

Address Changes: Send current PRB address label and new address; please allow eight weeks for change.

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House, Senate Closer on Immigration Reform

Both the Senate and the House seem committed to revising U.S. immigration law. Though the two branches of Congress look primarily toward employer sanctions and increased expenditures for border enforcement to curb the flow of illegal aliens. But as in previous years, some major stumbling blocks remain which may hinder any chance of a new immigration law being approved.

On Sept. 19, by a vote of 69 to 30, the Senate passed its version of the immigration legislation. This bill outlaws the known hiring, recruiting, or referring of any undocumented workers and fines employers up to $2,000 per illegal worker for the first offense. A second offense carries a fine of $2,000 to $5,000 per illegal worker, and the employer could receive a court order to stop hiring illegal aliens. Third violations would carry a maximum fine of $10,000. There is also a provision with fines of up to $3,000 per illegal worker and six months imprisonment for an employer convicted a second time for a pattern of hiring illegals. Before this bill, only illegal employees could be prosecuted while employers could legally hire unauthorized aliens.

Other measures aimed at curbing the immigration of illegal aliens include an increase in federal funds for border enforcement and the establishment of a nine-member commission to determine whether employer sanctions and increased border enforcement succeed in curtailing the flow of illegal aliens into the country.

The only section of the Senate bill that stirred heated debate was an amendment offered by Sen. Pete Wilson (R-Calif.). It calls for a special "alien allowance" for growers of perishable crops. Though all other businesses would have to stop hiring illegal aliens immediately, Wilson persuaded his colleagues to allow 350,000 seasonal farm workers into the country at any one time for nine months by simply applying for a visa.

The House bill, which as of this writing has gone no further than markup in the House Immigration Subcommittee, resembles the Senate bill. Any person is barred from knowingly hiring, recruiting, or referring (for a fee) an illegal alien. The maximum fine after three violations is $5,000 (as opposed to the Senate's $10,000). As in the Senate bill, punishment for multiple offenses on the part of employers may include imprisonment. Increased funds for border enforcement are also part of the House's solution to curbing the entrance of illegal aliens.

Amnesty for those undocumented aliens who can prove they have lived in the United States continuously for a specified period of time is another new reform upon which both Houses agree. The Senate bill would grant legal status to those aliens who have been living in the U.S. since before Jan. 1, 1980. The House bill carries a Jan. 1, 1982 date; this later cutoff would allow many more aliens to legally become U.S. citizens. Both provisions will reduce the chance of any future mass deportations.

The House Immigration Subcommittee has decided to delay their version of the controversial Wilson proposal until some future date. Nevertheless, Rep. Daniel Lungren (R-Calif.), who proposed the House guestworkers clause during the House markup, made it clear that he plans to bring up his proposal dealing with foreign farm workers only when the bill is heard before the full committee and later when it is brought to the House floor. The controversy surrounding this proposal is likely to block any final Senate-House compromise.

The House in fact moved in the other direction and adopted measures to protect the rights of U.S. workers which do not fit into the Senate's version. Farmers must provide workers who are U.S. citizens the same inducements they give foreign temporary workers, such as travel allowances to get to farms. Such protection, argues Rep. Howard Berman (D-Calif.), author of the proposal, is necessary to protect the rights of the unemployed Americans who would take the jobs if they

Continued on next page

The Suburbs' "Urban Villages"

"Soulless glass and concrete shells, a devastating comedown from the warmth and color of traditional towns and cities." This is how columnist Neal R. Peirce describes the "urban villages"—huge office complexes-cum-shopping centers and hotels—which have infiltrated once placid suburban areas.

Peirce, a nationally syndicated columnist, is horrified by this phenomenon and wrote a series of columns, appearing last August and September, aimed at pointing out the perils of this "suburban horror show."

Corporate America is moving to the suburbs, creating stress on roads designed for half the traffic load, and on the environment as well as water and sewage systems. One of the greatest costs of this suburban explosion is every commuter's nightmare: Traffic (with a capital T). Peirce maintains that the large cities' greatest fear, gridlock, whereby an entire city's traffic comes to a standstill, could become reality in the urban villages. City street systems are based on a grid framework, providing multiple roads from which drivers can choose. If one street or intersection becomes clogged, frustrated travelers can escape via an alternative road.

In suburbs, however, affordable living is rarely found around office complexes. Often, distances between less pricey residential areas and the workplace are so great that freeways or super highways must be used. Because of poor planning there will often be only one road available to an office complex or shopping center. And when that road clogs, there is no escape.

Continued on next page

FROM THE EDITOR'S DESK

"And it came to pass in those days, that there went out a decree from Caesar Augustus, that all the world should be taxed..." —Luke 2:1

"Taxed" is a broad way of translating "enumerated." For the event which begins the Christmas story was a census (with taxation and possible military service to follow, which might help explain people's coolness toward censuses in ancient times).

The method of counting people "each in his own city" is assumed to have been used across the Roman Empire, and made things easier for the census taker, if no one else. If carried out in the U.S., where 36 percent of the population does not even reside in the state they were born in, such a census would mean chaos. For the 800,000 largely nomadic people of Judea, it meant trudging to their family's city of origin to register and give name, rank, and occupation. But there was no way to sue the Census Bureau in those days.

Three censuses are known to have been taken during the reign of Caesar Augustus—in 28 B.C., 8 B.C., and A.D. 14. None of these quite jibes with over Gospel references, which suggest that Jesus was probably born between 6 B.C. and 4 B.C.

To confuse matters further, the Cyrenius mentioned in the second chapter of Luke was governor of Syria in both 6 B.C. and a later, unknown year. So what was the census of "all the world" of the Christmas story?

It may have been a late edition of the 8 B.C. enumeration; it may have been a later census by King Herod in the Roman manner. Scholars are still working it out, and all *PT* is trying to say here is (a) everything, even Christmas, has demographic aspects, if you look hard enough, and (2) Seasons Greetings!

—Art Haupt

Immigration

Continued from preceding page

could get to them. His amendment would also make it illegal to use foreign temporary workers as strike breakers.

Thus, even though the House and Senate share the same goal of curbing the flow of illegal aliens into the U.S. by penalizing employers who knowingly hire illegal aliens, a compromise between the House and Senate conferees is unlikely, due to the Senate's guest worker clause. This puts added pressure on the House as it prepares to consider the subcommittee's version of the bill. Although efforts are underway to find some sort of compromise to the controversy by the end of the year, it is likely to be an arduous task. □

Suburbia

Continued from preceding page

Another cause for alarm, Peirce writes, is the demise of the rush hour: traffic on suburban roads is no longer limited to the morning and evening hours in suburbs of many major urban areas (such as Houston, Dallas, Los Angeles-Orange County, and Long Island) and the trend is spreading. In addition, traffic congestion is fast losing its directional bias. No longer are the roads leading from the suburb to the city the only ones chock full of commuters; now there is no telling where a commuter might be headed.

Why has this unbridled growth been allowed to occur? Peirce blames the U.S.'s extraordinary lack of planning: "Probably no other nation in the world combines an exuberant economy with an aversion to planning." Moreover, he feels that big business is influencing town and county managers, convincing them not to restrict development.

Another dangerous consequence of this trend toward suburban work life is the "resegregation" of the work force. Peirce in fact likens it to South Africa's apartheid. He writes that the peripheral towns are overwhelmingly affluent and white. When the jobs are offered there, the lower income people, including a disproportionate number of minorities, are left out in the cold. He cites the case of the high-tech area west of Boston which had to bus in 1,200 jobless people from the Athol-Orange, Mass. area (closer to Boston) in order to meet the demand for Christmas-season department store clerks—a 100-mile daily commute.

The situation, though grim, is not hopeless, according to Peirce. If the corporations involved were forced by local ordinance or policy to provide the resources necessary to strengthen roads and road systems, to encourage car pooling and use of rapid transit, and to beautify the developments, at least part of the battle would be won. This would require state or local policies, hardly easy to attain, considering that developers often have great influence over town council actions. However, Peirce points to the cases of Florida and Massachusetts as models for the future.

In Florida, the state has passed a growth-management bill. It is now promising to fund roads, sewers and schools before, not after, new development is approved. Part of their concern is to protect fragile coastline and barrier islands. Massachusetts has no law, but it does have a policy: Gov. Michael Dukakis has striven to divert high-tech and service-economy expansion away from the growing corridors of Rt. 202 toward areas of high joblessness and underinvestment—with mixed success.

The suburbanization of the workplace, especially in its current state, has little to offer Peirce. He writes: "Goodbye, real streets or gutsy waterfronts or a place (heaven forbid) where someone might mount a soapbox and make a speech against Authority.... In time urban villages might become real people places. But for most of suburbia's instant cities, that's likely to be a long time coming." □

For information on obtaining Peirce's series of articles, write to *Population Today*, PRB, 777 14th St. N.W., Washington, D.C. 20005.

PRB Had a Memorable 1985

As 1985 comes to a close, the office is in some disarray as the PRB staff prepares for a December move to new, more spacious quarters. But PRB staffers and members alike can look with satisfaction on PRB's accomplishments for the year.

Under the continued leadership of President Thomas W. Merrick, PRB has in the past year garnered, along with new office space in Washington's up-and-coming downtown, a new AID contract, a new logo, more microcomputers, and more staff members. Moreover, in 1986, all PRB publications will undergo an appearance overhaul: members can look forward to an updated "family" appearance for the publications.

Perhaps the year's most exciting event was the award of AID's Research Dissemination contract to PRB. Promptly dubbed IMPACT (Innovative Materials for Population Action), the project strives "to improve use of population information and research findings by policymakers in developing countries and the donor community." The five-person project team, headed by Elaine M. Murphy, who was PRB's Director of Population Education from 1978 to 1984, will accomplish its objectives through the production and targeted distribution of population-related publications, along with response to ad hoc requests and technical assistance to LDC institutions.

IMPACT offers PRB the opportunity to expand its use of computers, both for the production of high-quality graphics, and through the use of an IBM PC-AT with a laser jet printer and graphics equipment. In fact, 1985 saw a great deal of PRB's work transferred to computers. A growing majority of the staff can no longer function without their trusty micros.

On Oct. 24, PRB hosted its annual awards dinner in Washington, D.C. This year, Dorothy Nortman was honored for her many contributions to the field of demography, not the least of which is her well-known "Fact Book" on population and family planning programs (see Nov. *PT*). Those in attendance heard Virginia R. Allan, a member of the U.S. delegation to the UN Women's Conference last summer in Nairobi, recall her thoughts and impressions of the Conference.

PRB's name was well represented in the popular press in 1985. Along with ample press coverage of PRB's publications, PRB population experts were interviewed for and quoted in, among others, *Time* and *Money* magazines this year.

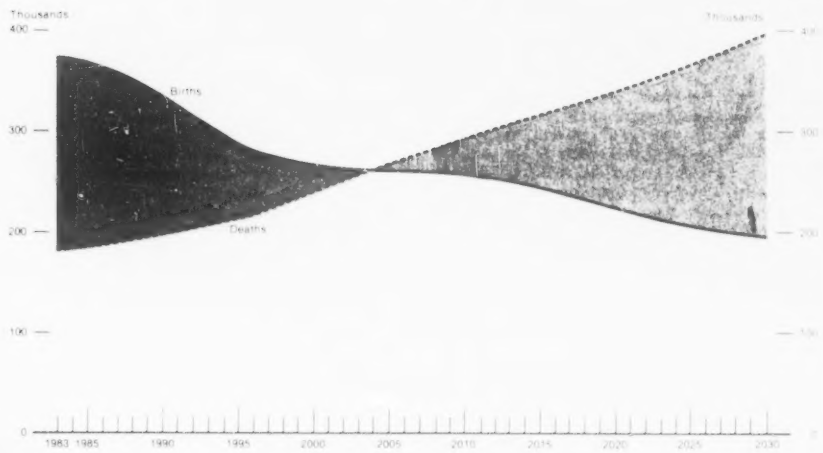
One PRB publication that received far and wide press coverage was *Who Cares? Demographic Trends Challenge Family Care for the Elderly*, part of PRB's Population Trends and Public Policy Series. This paper was written by Alice T. Day, PRB Visiting Scholar (sponsored by the Mellon Foundation) for 1984-1985. Shortly after completing the paper, Alice Day left PRB for her home in Australia, where she is now consultant to the National Bureau of Statistics.

In August, PRB welcomed Robert W. Gardner as the Visiting Scholar for 1985-1986. On leave from the East-West Population Institute in Honolulu, Gardner coauthored PRB's October *Bulletin* on Asian Americans (receiving wide press coverage) and is completing a related Census monograph. He will then resume his research on Asian immigration.

PRB's RAPID team (a subcontractor of the Futures Group's Resources for Awareness of Population Impacts in Development contract with AID) tracked the globe again in 1985. Vice President Leon F. Bouvier did demographic work in the Caribbean and Africa, while Thomas Goliber, who has officially joined PRB from the

Continued on next page

SPEAKING GRAPHICALLY



The above graph illustrates projected natural increase in Canada (see article, p. 6) under the assumption of low future fertility, an average of 1.4 children per woman. The left side of the "bow tie" indicates natural *increase* to about 2005 with annual births exceeding deaths while the right side illustrates natural *decrease*, the opposite situation.

Source: Statistics Canada, *Population Projections for Canada, Provinces, and Territories, 1984-2006*, Ottawa, 1985.

SURVEY REPORT

Botswana

Although Botswana's area of 232,000 sq. miles is a bit larger than that of France, the country's population of 1.1 million makes this southern African nation one of the continent's least densely populated. Only about 3 percent of the country's land is suitable for cultivation, with the rest semiarid or desert. Most of the population is settled in the more fertile eastern part of the country.

Mining has taken on increased importance in Botswana's economy in recent years, although farming and cattle raising are important activities. The country has now become one of the world's largest diamond exporters. Still, most Botswanans live in small settlements or rural areas; 82 percent of the population was classified as rural in the 1981 Census.

In 1984, the Botswana Family Health Division, in cooperation with Westinghouse Public Applied Systems, conducted the Botswana Family Health Survey (BFHS) to collect basic health and family planning data. Botswana's official policy is to reduce the population growth rate, and specific targets for family planning acceptors have been set.

The BFHS measured high levels of fertility, even higher than those reported in the census, a fact probably due to more probing questions in the survey. A total fertility rate (TFR) of 6.5 lifetime births per woman was reported. While this is a high level of fertility, it is not as high as rates in many less developed countries. The fact that women ages 45-49 surveyed reported 9 lifetime live births suggests that there has been some fertility decline in Botswana. Unlike some other sub-Saharan countries, infertility is not believed to be a factor in Botswana, ruling out disease as a cause for the fertility decline.

On average, surveyed women said that the number of children they expected to have was about 5.6. It is noteworthy, however, that the 15-19 year old respondents said that they "expected" to have only 3.9 children; that response was the same in both urban and rural areas. Attitudes on population size were also solicited, and 55 percent said they thought that there were too many people in the country.

Knowledge of contraception is quite high in Botswana. About three-fourths of the women had heard of a modern family planning method and virtually all of those approved of the idea generally. However, only one-third had ever used a modern method (with the pill predominating). Those who had used a traditional method, primarily abstinence, raised the total of contraceptors to about one-half of the sample.

Overall, Botswana has the second highest rate of women actually using family planning so far unveiled in continental sub-Saharan Africa. (Zimbabwe at 39 percent in late 1984 is highest.) Contraception was being practiced by 28 percent of the women in the sample who were currently in union; 19 percent of all such women in the sample were using a modern method (compared to 27 percent in Zimbabwe).

It appears that conditions in Botswana such as an effective government-supported family planning program, relatively high levels of education, and attitudes which perceive population growth as a national concern would favor a gradual decrease in fertility. However, expected family size is quite high, partners may often not approve of contraception, and sexual unions begin at an early age. To date, many family planning goals have been met or exceeded, but whether that record will be maintained remains to be seen. □

PRB's Year

Continued from preceding page

Futures Group, has logged his share of kilometers, particularly in Africa.

Closer to home, PRB staffers trekked to Boston for the annual meeting of the Population Association of America, and PRB was well represented at the conference of the International Union for the Scientific Study of Population in Florence in June.

Once the PRB staff is happily ensconced in new quarters, they will look to the coming year. PRB's new membership schedule takes effect beginning in January 1986; all members at that time will begin receiving all of PRB's publications, which will sport PRB's "new look." Watch for a clean, modern look with a strong family appearance. 1986 promises to be a time of transition for PRB—the staff looks forward to new and exciting changes. □

Canada's Population Future Projected

Slow growth from today's population of 25 million to about 30 million and then a gradual decline starting around 2026—that is one possibility given by a new set of Canadian population projections just released by Statistics Canada. This scenario would prevail if Canada's total fertility rate (TFR) of 1.7 lifetime births per woman were to remain constant and net immigration amounted to 50,000 per year. (See graph on page 5.)

Another possibility given some credence by the report is that the TFR could fall to 1.4 and that Canada's population could "top out" at 28 million around 2016. Or the TFR could rise (to 2.2), producing a Canadian population of 38 million by 2031, and still growing; this latter option is only seen as a possibility if there were a "radical societal change in the outlook on life" in Canada.

As do all projections, the Canadian series also must make some assumptions about future immigration and life expectancy. On the former, Statistics Canada sees an immigration level of less than 100,000 unlikely given present trends in family-reunification immigration and world refugee problems. A second alternative is 150,000 per year should an improving economy produce a demand for additional labor force in the face of low fertility. From these figures must be subtracted 50,000 emigrants (estimated from family allowance and tax records).

The two assumptions on net immigration make some differences in the projections, forestalling the onset of population decline somewhat. Life expectancy is assumed to rise a bit faster for males than females, reaching about 75 for males in 1996 and 82 for females. □

Population Projections for Canada, Provinces, and Territories 1984-2006, prepared by M.V. George and J. Perreault, 1985, 346 pages, is available from Population Projections Section, Demography Division, Statistics Canada, Ottawa, K1A OT7. Price: Can.$40.00 in Canada; Can.$50.00 all other countries.

Populandia Patter

Populandia rose out of the Pacific Ocean eight years ago—and ever since, this mythical mini-continent has served as the repository of the world's natural increase (the "surplus" of births over deaths). Since then, too, PRB publications have kept readers up to date on the faraway island nation (most recently, in the December 1984 issue of *PT*).

Over a third of a million babies are born around the world each day and over 60 percent of them represent natural increase, the other 40 percent serving to replace people who have died during the same period. Populandia started out with one baby on Jan. 1, 1978, but because of this kind of growth its population did not stay small for very long.

As of Dec. 31, 1985, Populandia's population of youngsters, all born in the last eight years, stands at 621,470,421. Though it represents only the natural increase of the past eight years, this is a goodly number of people constituting about one-eighth of the world's total population—more populous than any countries except China and India, more people than any continent save Asia. It is more people than speak English and Arabic combined, more than are estimated to be Roman Catholic, and more people than existed on the planet in the year 1600. □

1990 Census

Continued from page 2

Of these, 23 are still active. They are mainly suits by cities and states charging that the results of the 1980 Census were invalid because of undercount. One major suit, filed by New York City and State, was tried twice and is now awaiting the judge's decision for the second trial, which was held in the Federal Court of the Southern District of New York.

The other pending 1980 undercount cases have been referred to the District Court in Baltimore for the purpose of pretrial proceedings, though when and where those cases will go to trial is uncertain.

In 1970 no significant lawsuits clouded the Census Bureau's horizon. The avalanche of litigation from states and cities involving the 1980 Census correlates pretty directly to the increase in federal programs that use population figures in their formulas for disbursing funds. So far, the Census Bureau has dodged the litigious bullet, and Census figures remain as is, with no adjustment for population.

Should the Bureau lose any undercount case, the situation would change drastically. In order for the decennial census to continue as the basis for apportionment, the problem would probably be passed on to Congress, which would have the unenviable task of agreeing on and writing into law a Constitutionally unobjectionable bill providing for some undercount-adjustment formula or other.

Will 1990 mean more lawsuits, more enumeree paranoia? No one knows. All the Bureau of the Census can do is continue working on keeping costs down and confidentiality and convenience up. And it has to keep beating the public relations drum to try to convince the nation's 240-million-odd residents of the seemingly self-evident truth that America's once-a-decade family "snapshot" is taken to help, not threaten. □

Population Update

Estimated United States Population:

As of July 1, 1985	238,816,000
As of July 1, 1984	236,681,000

The above estimates include armed forces overseas and are from U.S. Bureau of the Census, *Current Population Reports*, Series P-25, No. 977.

Estimated World Population:

As of December 1985	4,880,000,000
Annual Growth	82,000,000

Estimated by extrapolation of the mid-1985 world population given on PRB's 1985 World Population Data Sheet.

Latest Provisional Statistics for the U.S.: July 1985

	12 months ending with July					
	Number		Rate			
Item	1985	1984	1985	1984	1983	1982
Live births	3,738,000	3,639,000	15.7	15.5	15.8	16.0
Deaths	2,082,000	2,027,000	8.8	8.6	8.6	8.5
Natural increase	1,656,000	1,612,000	6.9	6.9	7.2	7.5
Marriages	2,456,000	2,456,000	10.3	10.4	10.5	10.6
Divorces	1,176,000	1,167,000	5.0	5.0	5.0	5.2
Infant deaths	39,400	39,100	10.5	10.7	11.0	11.3
Population base (in millions)	...	...	237.5	235.0	232.9	230.7

Note. Rates are given per 1,000 population, except for infant deaths, which are given per 1,000 live births. Rates are based on revised population estimates from the 1980 Census.

Source. Monthly Vital Statistics Report (Vol. 34, No. 7) from the National Center for Health Statistics.

DEMOGRAPHER'S

Questionable Statistics

by John G. Keane

This article originally appeared in American Demographics, June 1985, and is reprinted by permission from the author and from American Demographics, P.O. Box 68, Ithaca, N.Y. 14851, subscriptions $48 per year.

Despite centuries of statistical evolution, burgeoning computer technology, and an expanding educational emphasis on quantitative methods, people frequently abuse statistics. This abuse misleads an unwary public, and it takes many forms, the most common of which I review here in an effort to promote statistical literacy.

Averaging, Not Adding

A few years ago someone observed that, because two counties had a 10 percent and 13 percent minority share in their respective populations, then the Census Bureau's work force—at 13.2 percent minority—was far below the 23 percent required for proportional representation.

But the observer made a mistake. He added the county percentages together when he should have taken the weighted average of the minority shares of the two counties. Had he calculated correctly, he would have discovered that the minority share of the Census Bureau's work force exceeded the proportional representation.

This type of statistical error occurs with some frequency. A few months ago, for example, a dress shop advertised a sale with huge banners announcing:

10 percent off the first dress
15 percent off the second
Total savings—25 percent!

These statistics might have made some shoppers happy, believing that they were saving 25 percent when they bought two dresses. Shoppers with a rudimentary knowledge of statistics, however, knew they would save less than 15 percent.

Table 1: Frequency Fixation

Percent change in real GNP

year/quarter	flash	revised	difference
1984			
4	2.8	3.9	+1.1
3	3.6	1.6	−2.0
2	5.7	7.1	+1.4
1	7.2	10.1	+2.9
1983			
4	4.5	5.9	+1.4
3	7.0	6.8	−0.2
2	6.6	9.4	+2.8
1	4.0	3.3	−0.7
1982			
4	−2.2	−1.3	+0.9
3	1.5	−1.0	−2.5
2	0.6	1.0	+0.4
1	−4.5	−5.5	−1.0
1981			
4	−5.4	−5.3	+0.1
3	−0.5	2.2	+2.7
2	0.0	−1.5	−1.5
1	5.5	7.9	+2.4

Note. These changes are seasonally adjusted, and given at annual rates.
Source. Bureau of Economic Analysis.

Dated Numbers

Between 1970 and 1980, there was a statistically significant decline in average household size, from 3.11 to 2.75 persons per household. This decline took many local officials by surprise. Since 1970, some of them had been estimating their local populations by taking the 1970 census count of housing, adding new housing starts, subtracting demolitions, and multiplying by the 1970 average household size. To the distress of many, the 1980 census count of the local population was much lower than they had estimated because of the decline in average household size. Local officials learned anew the risk of using dated statistics.

Frequency Fixation

At the other extreme is the fixation of the business world on the frequency of numbers rather than on their quality. There is a trade-off between quality and frequency—particularly when it comes to producing weekly numbers. Would an improvement in quality be worth a less frequent production schedule?

Businesses eagerly await preliminary key economic statistics—such as weekly money supply figures and quarterly GNP ("flash") estimates. But some businesses take these statistics too literally, not understanding the limitations of preliminary figures, despite the efforts of statistical agencies to educate users about the shortcomings of such statistics.

Not infrequently, revised numbers are substantially different from preliminary estimates—so different, in fact, that had a business waited for the revised number, it would have acted differently than it did based on the preliminary figure. Table 1 shows how far apart the preliminary and revised estimates of GNP can be. Note, too, that the flash estimates are not getting any better at predicting the final estimate.

Some users argue that only the direction of change is important, not the degree. As long as the direction of change indicated by the flash estimate is confirmed by the revised estimate, then any decisions a business makes based on the flash estimate will be correct. But this assumption could lead them astray, because even relatively small percentage changes translate into huge absolute amounts of dollars, goods, or workers. A 0.5 percent difference in the employment level, for example, translates into about half a million jobs.

Income Headlines

Table 2 illustrates how income statistics can be interpreted in a variety of ways. Though the statistics are the same, the way that they are presented virtually dictates their message.

By examining absolute growth in per capita income for whites and

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Table 2: Alternative Newspaper Headlines

	Per capita income (dollars) 1969	1979	difference
White Per Capita Income Grows More Than Black!			
black	3,566	4,545	+979
white	6,522	7,808	+1,286
Black Per Capita Income Grows More Than White!			
black	3,566	4,545	+27%
white	6,522	7,808	+20%
Little Change in Black/White Income!			
black/white ratio	55%	58%	+3%

Note. All in constant 1979 dollars.

blacks, it appears that white income grew more between 1969 and 1979. By comparing the percentage change, it appears that black income grew more. And by examining the change in the relative proportion of black to white income, there appears to be little difference between 1969 and 1979. To paraphrase the late Marshall McLuhan—the format is the message.

The headlines in Table 2 offer three contrasting interpretations of income statistics. Which headline you prefer might well hinge on your current agenda, and so it is with headline writers. But income statistics carry too much economic importance and too many political overtones to be handled carelessly.

Goods Versus Dollars

A recent newspaper headline read, "Cigarette Industry Grows." The copy asserted that "the value of products produced by the cigarette industry in 1982 was nearly double that of 1977, the Census Bureau reported Tuesday." The facts are true enough, but the headline—"Cigarette Industry Grows"—was not the conclusion reached in the Census Bureau's official press release. In fact, in physical units—the number of cigarettes sold—the cigarette industry declined from 1977 to 1982. Again, it was the headline writer who decided whether the cigarette industry had grown or declined.

Business Hyperbole

Newspaper and magazine writers sometimes get carried away with statistics.

The host of "Wall Street Week" on public television (Dec. 7, 1984) declared that unemployment took a "steep decline" in November 1984, from 7.4 percent to 7.2 percent. To call an 0.2 percent drop in unemployment a "steep decline" considerably overstates the case, particularly when this drop merely extended a decline that had been going on for 11 months.

"Sales of new single-family houses rose a sharp 3.1 percent (in December 1984), setting an annual pace of 606,000 sales," asserted an article in *USA Today* (Feb. 1, 1985, p. B1). It is an overstatement to call a 3.1 percent (18,000 houses) advance "sharp" when there were even larger sales increases or decreases in every other month in 1984 except one, and the December figure is only accurate to within plus or minus 5 percent (30,000 houses).

In fact, it is well known that the new home sales statistical series is erratic and sales increases or decreases of 10 to 20 percent are not uncommon. In its press releases the Census Bureau stresses that—"Month-to-month changes in seasonally adjusted statistics often show irregular movement. It takes four months to establish a trend for new home sales."

The *Wall Street Journal* described a 2.3 percent decline in the futures market crude oil price as a "plunge." ("Crude-Oil Prices Unlikely to Rise Soon Due to Mild Winter and Strife in OPEC," *Wall Street Journal*, Jan. 7, 1985, p. 39.) What words would the writer use to describe a 23 percent decline, if that were to occur? What adjective would be powerful enough to describe the stock market crash of 1929?

When you examine changes in business statistics—or any statistics—you must consider the context of the change before you judge whether there has been a surge or a plunge. This kind of hyperbole can cause business decision makers to overreact to statistics. The resulting business decisions, taken collectively, may magnify rather than modify short-term fluctuations in the economy. Businesses should use short-term economic statistics to continually readjust their perspective on the longer-term trends rather than to chart dramatic shifts in course.

Continued on next page

Table 3
Sources of Nonsampling Error

Setting Objectives:
- errors in translating the sponsor's problem into operational objectives for a survey or census

Sample Design:
- population list errors
- errors in implementing the sampling scheme

Measurement Process:
- office staff errors
- field staff errors
- respondent errors
- noninterviews/missing data
- preprocessing errors

Estimation Procedure:
- estimating equation errors
- computer programming errors in implementing estimating equations
- faulty editing routines
- machine errors

Survey Report:
- errors in transcribing or publishing computer output
- errors in interpretation of survey results

User Errors:
- inferring to same population at a different point in time
- inferring to different population or subpopulation
- inferring to an underlying concept (for example, failure to measure what is intended)
- data analyses errors

Demographer's Page

Continued from preceding page

Political Polls

Though reputable pollsters contend that their polls should not be used as projections or forecasts, these admonitions often go unheeded during the heat of a campaign. Unfortunately, this frequently and unfairly discredits the credible pollsters whose disclaimers are ignored.

The public's lack of knowledge about survey methods is behind much of the misinterpretation of polling data. The media are often unfamiliar with the limitations of polls, and they do not concern themselves with survey design, conduct, and interpretation. The public, in defense, should ask:

- When did the poll occur? (Did outside events affect the results?)
- In comparing numbers from several polls: Were the polls taken at the same time? Were the respondents chosen in the same way? Were the sample sizes considerably different? Were the respondents asked questions in a different way? Was one poll taken by personal interview and another by telephone?
- Are the interpreters of the polls ignoring sampling error in their conclusions? Do they confuse "percentage points" with "percentages" when referring to the ranges of sampling error? (Frequently this is the case.)

Spurious Accuracy

It is also an abuse to be statistically but misleadingly precise. Examples abound: A city declares that its streets are 85 percent cleaner than they were a few years ago; a Battelle Laboratories study projects that undetected counterfeit money will amount to $16.3 million a year by 1992[2]; survey researchers present column after column of responses rounded to the nearest hundredth of a percentile. Is our increasing dependence on quantitative methods producing this pseudo-science?

Nonsampling Error

In statistical reporting, most researchers pay attention to sampling error, a tidier concept than nonsampling error because it is easier to measure. Table 3 shows the many ways that nonsampling error can creep into statistical results, ranging from errors in the way respondents are interviewed to errors in interpreting results. Researchers should define—or better yet, measure—the sources of nonsampling error to strengthen their survey results.

Misleading Charts

Tables and charts should be carefully designed to present information clearly. Poor scaling as well as confusing, incorrect or illegible labeling and too much "junk" on a chart all can mislead the statistics user.

To make a good statistical presentation, follow the prescription of Howard Wainer who writes in *American Statistician:* "Examine the data carefully enough to know what they have to say, and then let them say it with a minimum of adornment."[3] Unfortunately, many people do not know how to listen to statistics.

Carelessness

Then there is plain, old-fashioned carelessness. It takes a variety of forms—accidentally transposing numbers, not checking facts, overreliance on secondary sources of information. In this age of newspaper syndication, for example, when carelessness results in factual misstatement, it is virtually impossible to obtain a syndication-wide correction. The moral is—be careful.

Any Port in a Storm

The reasons for statistical abuse range from ignorance to arrogance. Sharing the blame, however, is the "give me any numbers you have" mentality of some statistics users who are willing to sacrifice accuracy for immediacy. When quality is questionable, however, any numbers are not superior to no numbers.

"More so than any other people in the world, Americans are data junkies," observes author Ben J. Wattenberg.[4] In many respects, he is correct. This is just another reason to treat statistics carefully.

Now is the time to renew statistical literacy. Advances in computers, software, and quantitative methods cannot substitute for user knowledge of statistics. Perhaps it was this sentiment that prompted the 19th century Prussian mathematician, Leopold Kronecker, to assert, "God made integers, all else is the work of man."[5]

As the work of man, the discipline of statistics offers enormous opportunities, because it crosses social, economic, political, and geographic boundaries. Statistics are a quantitative Esperanto. Correctly crafted, statistics are a boon, not a burden, to decision making. Correctly interpreted and presented, statistics are a useful investment, not a useless cost, to their sponsors. □

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SOFTWHERE

MALTHUS is an educational software unit consisting of the program MALTH, a mathematical model which follows a simple Malthusian framework. It enables the user to subject exponential population growth to the constraints of food supplies limited by the law of diminishing returns and the availability of resources such as oil and cultivable land. Using variables such as the birth rate, death rate, and oil reserves, the population is projected to the year 2275. The model can also be used to "predict" the past by using values for the year 1900.

This unit is designed for use with students aged 15 years plus, and was produced by the Computers in the Curriculum Project at Chelsea College.

MALTHUS is available on Apple diskette for $59.95.
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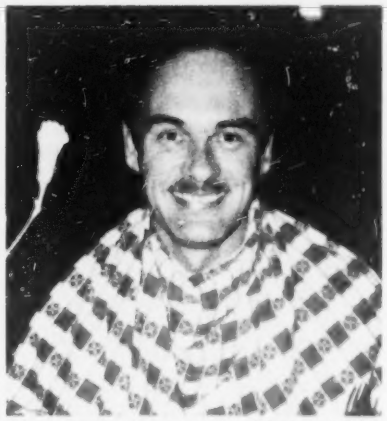

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TAKE A NUMBER . . .

Hindsight: In 1970, PRB published a speech of George Brown, then Census Bureau Director. Mr. Brown looked ahead to 1985, prognosticating on our future demographics. How well did he do? All in all, not badly. The 1985 U.S. population was projected to be between 240 and 250 million. Although it in fact has reached only 238 million, that was a reasonable projection, considering that women's birth expectations were for 3 children apiece in 1970. Brown did allude to the fact that fertility could drop lower than any 1970 data might suggest.

Brown was a bit further off in predicting migration, indicating that some eastern states such as Connecticut, New Jersey, and Maryland would be major magnets. He did correctly point to California, Arizona, and Florida as growth areas, but omitted Texas; it is interesting today to note that the term "Sun Belt" does not appear in the speech, nor does "baby bust." Another bit of prescience: Brown alludes to more rapid growth in nonmetropolitan counties in the future and the slowdown in the growth of big city populations.

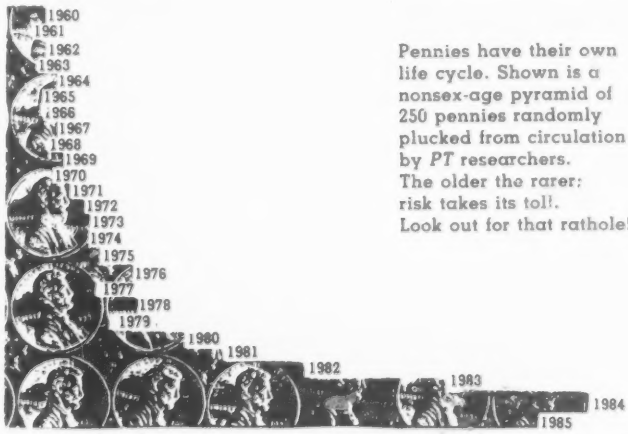
Population Bulletin: It can now be told: that the world population figure for 1971, 3,745,635,221, is incorrect. This disturbing news comes to us via Jean van der Tak, PRB's *Population Bulletin* editor. Jean's family, it seems, was living in the USA in 1970 and was duly counted in the 1970 Census, we are happy to report.

However, the good news stops right there. Jean, when pressed, admitted that she was not living in the USA in 1971 but in the Netherlands. She was also counted in the 1971 Dutch Census and the figures were duly cranked into the population count of *that* country, then into the Western Europe figure, from there into the Europe total, and (you know the rest) right smack into the world total. To make matters worse, the error is actually *five*, since that was the size of Jean's family. Was that five ever subtracted from the 1970 USA figure? You'd better believe it wasn't.

This little enumerative slip has wrought statistical havoc. As a service to our readers, a special squad of PRB demographers is now busily recalculating all known rates. The first preliminary results show that the world crude birth rate in 1971 was *not* 33.8658198 per 1,000 as we all thought, but in truth was 33.8558199 (or 3.386581986E01 for you deep thinkers).

Our bone-weary Reevaluation Team will stay on the job until all true rates for 1971 are known. Who says that individual people can't affect world-class rates? Shame on you, Jean . . . .

. . . addenda



Pennies have their own life cycle. Shown is a nonsex-age pyramid of 250 pennies randomly plucked from circulation by *PT* researchers. The older the rarer: risk takes its toll. Look out for that rathole!

CURRENT READINGS

PRB welcomes materials on population topics for possible inclusion in Current Readings. Publishers may address review copies to Book Review Editor, POPULATION TODAY, Population Reference Bureau, 777 14th St., N.W., Washington, D.C. 20005.

ABORTION: Moral and Legal Perspectives, edited by Jay L. Garfield and Patricia Hennessey. Amherst, Mass.: University of Massachusetts Press, 1984. 384 pages. $13.95, paper. ISBN 0-87023-440-4.

When, in 1973, the Supreme Court ruled that all existing laws limiting the availability of abortion violated a woman's right to privacy and were therefore unconstitutional, it certainly did not close the book on the abortion debate. The decision left open a plethora of complex issues surrounding abortion. These issues stretch well beyond the question of prolife vs. prochoice.

This compilation of essays addresses many of the philosophical and legal problems which arise in any comprehensive discussion of abortion. Areas explored include the all-pervasive question of personhood, and of the relationship between law and morality (Is abortion a question of privacy or murder?). In addition, the nature of the abortion act itself, i.e., whether it is an act of killing or of passively letting die, is discussed.

The essays are thoughtful and thought-provoking, and present an array of perspectives. This book approaches abortion as a philosophical subject worthy of scholarly thought. In his introduction, editor Jay L. Garfield writes, "[the issue of abortion] requires careful scholarly examination of the fundamental moral and legal questions into which the issue resolves." This work represents one such examination, and is a valuable addition to the post *Roe v. Wade* literature.

—Janine Adams

AT ANY COST: Corporate Greed, Women, and the Dalkon Shield, by Morton Mintz. New York: Pantheon, 1985. 308 pages. $17.95. ISBN 0-394-54846-9.

This book by a prize-winning *Washington Post* investigative reporter documents a chilling tale of corporate irresponsibility that led to a catastrophe "without precedent in the annals of medicine and law."

From 1971 to 1975 the huge, U.S.-based pharmaceutical firm of A.H. Robins, makers of Robitussin cough syrup and Chapstick lip balm, sold 2.8 million Dalkon Shield IUDs in the U.S. and another 1.7 million in 79 other countries. Because the multifilament nylon tail of Robins's Shield wicked bacteria from the vagina to the uterus, unlike the monofilament tails of other IUDs, tens of thousands of women suffered pelvic inflammatory disease, often leading to sterility and at least 20 deaths.

Some 5 percent of women became pregnant with the spike-edged Shield in place—nearly five times the rate claimed by Robins—and most miscarried or gave birth prematurely to defective babies.

So far Robins and its insurer have paid almost $500 million in claims and legal expenses to settle some 9,200 Shield lawsuits; over 5,000 cases remain pending. In August 1985 Robins filed for bankruptcy in a move to suspend lawsuits for at least one year.

Mintz describes in conscientious, gripping detail how Robins invited disaster. In relentless pursuit of profit, the company failed to test the Shield for safety, suppressed "unfavorable data," ran deliberately misleading advertising, destroyed telltale documents, intimidated women giving evidence in court, and delayed until October 1984 (10 years after the Shield had been taken off the market) a campaign to urge women still wearing the device to have it removed. "Corporate irresponsibility at its meanest" was how a U.S. District Court judge summed it up.

—Jean van der Tak

DARK HARVEST, by Brent Ashabranner. Photographs by Paul Conklin. New York: Dodd, Mead, 1985. 150 pages. $14.95. ISBN 0-396-08624-1.

Migrant farmworkers play an indispensable role in harvesting the fruits and vegetables produced by U. S. agriculture. By almost any measure, the people who gather our food are also our most depressed workers. *Dark Harvest* presents an informative and very readable story of the more than one million men, women and children who each year follow the crops, from broccoli and cucumbers to peaches and apples, to perform tasks that require human hands rather than machines.

Many of our farmworkers have homes in California, Florida, and Texas; others are part of the complex process of legal and illegal migration from Mexico and the Caribbean. They spend much of the year, from April through November, on the road. Their daily existence and chances to earn a living are plagued by poor housing and sanitation, risk of accidents, exposure to pesticides, uncertain weather, and exploitative crew leaders. While the majority of farm laborers are unattached males, a significant proportion of the work is done by families who work as a unit. For children, many of whom are working in the fields at age four or five, the toll in lost education and pesticide poisoning is particularly heavy. Head Start and programs organized by the churches have done much to ameliorate the conditions of migrant worker children.

Author Brent Ashabranner and photographer Paul Conklin portray farmworkers through interviews and pictures, combining vignettes of individuals and families in the migrant labor process with useful factual data about their lives, problems, and the institutions that affect them. The book is ideal for courses on social and public policy and interesting reading for anyone who wants to be informed about this important issue.

—Thomas W. Merrick

PUBLICATIONS RECEIVED

ALONE – NOT LONELY: Independent Living for Women over Fifty, by Jane Seskin. Washington: American Association of Retired Persons, 1985. 229 pages. $6.95.

COUNTRIES OF THE WORLD AND THEIR LEADERS YEARBOOK 1985: Supplement. Detroit: Gale Research, 1985. 412 pages. $50.00.

HISTORICAL ATLAS OF AFRICA, edited by J.F. Ajayi et al. New York: Cambridge University Press. 1985. $75.00.

LIBERIA: A Country Study, by The American University, Foreign Area Studies, Washington, D.C.: U.S. GPO, 1984. 342 pages. $12.00.

POPULATION INFORMATION IN TWENTIETH CENTURY CENSUS VOLUMES: 1900-1940, by Suzanne Schulze. Phoenix: Oryx Press, 1985. 274 pages. $74.50.

TARGETS FOR HEALTH FOR ALL, by the World Health Organization, Regional Office for Europe. Copenhagen, Denmark. 200 pages.

SPOTLIGHT

SOUTH AFRICA

Population (1985 est.): 32.5 million
Land area: 471,400 sq. miles
Births per 1,000 pop. (1983): 35
Deaths per 1,000 pop. (1983): 14
Rate of natural increase: 2.1 percent
Total fertility rate: 5.1
Infant mortality rate: 92 infant deaths per 1,000 live births
Life expectancy at birth: 56 years
Exports: Gold, diamonds, minerals, agricultural products
Imports: Manufacturing equipment, industrial raw materials
Capital: Pretoria

by Jerry Judy

A nation divided. This current and historical description of the Republic of South Africa holds equally for its population. Summaries of the population as a whole, such as those given above, often fail to reveal the many sharp differences which may greatly affect the future.

The population characteristic that dominates South Africa is its great racial, linguistic, and cultural heterogeneity. The Dutch East India Company established a supply station at Cape Town in 1652 for its ships carrying riches from the East. There were soon conflicts with the nomadic Hottentots and San (Bushmen). The British established permanent colonial control in 1806. Active campaigns attempting to Anglicize the Boers who had developed a separate identity and language, along with conflicts with blacks, set the stage for the Great Trek of Boer farming folk into the northern parts of the country between 1834 and 1838. Conflicts between the independence-minded Boers, the British, and black peoples created a pattern of racial attitudes, warfare and political struggle which continues to the present.

Since the elections of 1948, the government has given statutory force to the traditional South African practices of segregation and racial superiority. This practice of racial separateness argues that every race has a unique destiny and a cultural contribution to make. Races must therefore be kept separate so as to be allowed to develop on their own. This means even different black ethnic groups should as far as possible be kept separate from one another. Within the white group the idea of an exclusive community of true Afrikaners which should be preserved from contamination by English language and culture remains significant.

According to the 1980 Census, the proportion of the four broad groups making up the population are: 1) Blacks—Bantu-speaking peoples who fall into at least ten distinctive ethnic groups (68 percent); 2) Whites—descendants of mainly Dutch, English, French Huguenot, and German settlers (18.2 percent); 3) Coloureds—the persons of mixed race with whites, slaves from the East, Hottentot tribes, and blacks providing their ancestry (10.5 percent); and 4) Asians, mainly of Indian origin (3.3 percent). There are many recognized divisions within each of these groups.

The census counted a total of 24.9 million persons. However, these figures did not include several million blacks who were defined as belonging to independent Bantu Homelands or nations. These "nations" are recognized by no countries other than South Africa, but they do provide a justification for denying normal civil rights to blacks because these persons are defined as having an alien nationality. This allows discrimination to be based less on explicit racism and more on an "alien" status.

Despite population removals and distortions created by the census, the percentage of the total population who are white has decreased by about 5 percent since 1946, while the black population has increased by almost an equal amount. The gap is due mainly to higher fertility for blacks. In 1980 the total fertility rate for whites was below the replacement level. The TFR for blacks is estimated to have declined from 6.6 in the sixties, but was still 5.2 in 1980. Any increases for whites will depend mainly on immigration. Blacks are likely to be allowed to enter the country only as temporary workers.

The President's Council, an important advisory body of the government, issued a sobering report on the demographic trends in the country in 1983. With a doubling time of only 33 years, South Africa falls squarely in the category of less developed countries. Thus the government considers the rates of natural increase, population growth, and fertility to be unsatisfactory because they are too high. At the same time immigration from European countries is encouraged. More than 2 million people have been resettled in remote areas of the country to decelerate the growth of cities. Given the divisions within South Africa, any program designed or sponsored by government will probably have a credibility problem.

This *Spotlight* was prepared by Jerry Judy who is a visiting professor at PRB from Shippensburg University.